

REMARKS

Reconsideration of the above-identified Application is respectfully requested. Claims 1-20 are in the case. Claims 1 and 11 have been amended.

Regarding the rejection of Claims 1 and 11 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite, Claims 1 and 11 have been amended to overcome the rejection to now read as was interpreted by the Examiner, with which interpretation Applicants agree. No new matter has been added (see Specification, page 7, paragraph 019, lines 4-7). It is respectfully submitted that this rejection has been overcome. Wherefore reconsideration and withdrawal of this rejection are respectfully requested.

Regarding the rejection of Claims 1, 2, 4, 7, 11, 12, 14 and 17 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Smith et al. in view of Ogasawara, this rejection is respectfully traversed. Independent Claim 1 recites a current limiting circuit wherein a control circuit monitors a voltage across a switch, connected between a power supply and a load, and a voltage across a shunt resistor connected to the switch, and limits the current through the switch when exceeding a current limit set by the shunt resistance as determined by the voltage across the shunt resistor and the voltage across the switch. This novel arrangement provides for limiting current flow to a predetermined maximum through the switch in an overvoltage condition, thus avoiding damage to circuitry, and does so without requiring a sense resistor in the power conduction path, while at the same time providing programmability by one resistor external to the control circuit.

The patent to Smith et al. concerns unrelated art. Their arrangement apparently relates to a battery protection circuit to protect against excess charging and discharging currents, and has as its purpose turning current completely on or completely off. As mentioned above, this important aspect of the invention as set forth in Claim 1 operates to *limit* current flow to a predetermined maximum through a switch in an overvoltage condition, in order to protect circuitry, for example during hot swapping a circuit board into a powered

backplane. This difference underlies the difference in what Smith et al. disclose from this important aspect of the invention as set forth in Claim 1. That is, Smith et al. neither show nor suggest a control circuit which monitors a voltage across a switch, connected between a power supply and a load, and a voltage across a shunt resistor connected to the switch, and *limits* the current through the switch when exceeding a current limit set by the shunt resistance as determined by the voltage across the shunt resistor and the voltage across the switch. Instead, their control circuit merely shuts current on and off. See Smith et al. Abstract, ll. 12-14, and col. 7, ll. 22-26. Note that in Figures 4a, 4b and 4c of Smith et al. the output 110 of their control circuit controls logic 105 to turn MOSFETs 103 and 104 to be either on or off. Thus, the patent to Smith et al. fails to show or suggest this important aspect of the invention as set forth in Claim 1.

The patent to Ogasawara fails to cure the deficiencies of Smith et al. Like the patent to Smith et al., the patent to Ogasawara concerns unrelated art. The patent to Ogasawara apparently relates to a liquid level detecting apparatus. It discloses a detecting resistor for immersion in a liquid, in parallel with a constant current source. As the liquid level changes, so does the resistance of the detecting resistor, resulting in a voltage across the detecting resistance that correspondingly changes, as well. This voltage is sensed by other circuitry to provide the level detection. This has nothing to do with a control circuit which monitors a voltage across a switch, connected between a power supply and a load, and a voltage across a shunt resistor connected to the switch, and limits the current through the switch. The other art of record is even less relevant.

Therefore, it is respectfully submitted that Claim 1 is allowable over Smith et al., Ogasawara, and, indeed, all of the art of record whether considered alone or in any combination.

Independent Claim 11 recites a current limiting circuit wherein a control circuit monitors a voltage across a switch, connected between a power supply and a load, and a voltage across a shunt resistor connected to the switch, and limits the current through the switch when exceeding a current limit set by the shunt resistance. Thus, the arguments as those set forth above for the

allowability of Claim 1 apply as well to Claim 11, and therefore those arguments are incorporated here as if set forth in their entirety.

Therefore, it is respectfully submitted that Claim 11 is allowable over Smith et al., Ogasawara, and, indeed, all of the art of record whether considered alone or in any combination.

The other claims under this rejection, Claims 2, 4, 7, 12, 14 and 17, all depend from Claim 1 or Claim 11, and so for the reasons set forth above are allowable as well, as well as for the additional limitations found therein.

Wherefore, reconsideration and withdrawal of this rejection are respectfully requested.

Regarding the rejection of Claims 3 and 13 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Smith et al. in view of Ogasawara and *In re Japikse*, this rejection is respectfully traversed. Claim 3 depends from Claim 1 and Claim 13 depends from Claim 11. The reasons for the allowability of Claim 1 and Claim 11 over Smith et al. and Ogasawara are set forth above, and thus apply as well to these claims. Therefore, those arguments are incorporated here as if set forth in their entirety. The court decision *In re Japikse* fails to cure the deficiencies of Smith et al. and Ogasawara. It was merely cited for the proposition that rearranging parts of an invention involves only routine skill, and does not disclose relevant art.

Therefore, it is respectfully submitted that Claims 3 and 13 are allowable over Smith et al., Ogasawara, *In re Japikse*, and, indeed, all of the art of record whether considered alone or in any combination. Wherefore, reconsideration and withdrawal of this rejection are respectfully requested.

Regarding the rejection of Claims 9, 10, 19 and 20 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Smith et al. in view of Ogasawara and modern design practice, this rejection is respectfully traversed. Claim 9 depends from Claim 1, and Claim 10 depends from Claim 9. Both Claims 19 and 20 depend from Claim 11. The reasons for the allowability of Claim 1 and Claim 11 over Smith et al. and Ogasawara are set forth above, and thus apply as well to these claims. Therefore, those arguments are incorporated here as if set

forth in their entirety. Modern design practice fails to cure the deficiencies of Smith et al. and Ogasawara. Modern design practice was merely cited for the proposition that it is widely used to incorporate all circuit elements (except some, which is difficult to integrate) into integrated circuit package, and does not relate to the control circuit feature of Claim 1 nor to the control circuit feature of Claim 11.

Therefore, it is respectfully submitted that Claims 9, 10, 19 and 20 are allowable over Smith et al., Ogasawara, modern design practice, and, indeed, all of the art of record whether considered alone or in any combination. Wherefore, reconsideration and withdrawal of this rejection are respectfully requested.

Regarding the rejection of Claims 3, 5, 6, 8, 13, 15, 16, and 18 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Smith et al. in view of Ogasawara and A. Sedra et al., this rejection is respectfully traversed. Claims 3, 5, 6 and 8 all depend, either directly or indirectly, from Claim 1. Claims 13, 15, 16 and 18 all depend, either directly or indirectly, from Claim 11. The reasons for the allowability of Claim 1 and Claim 11 over Smith et al. and Ogasawara are set forth above, and thus apply as well to these claims. Therefore, those arguments are incorporated here as if set forth in their entirety. The article to Sedra et al. fails to cure the deficiencies of Smith et al. and Ogasawara. Sedra et al. was merely cited for the proposition that P-channel and N-channel MOSFETs are mutually replaceable with some minor circuit adjustment, and does not relate to the control circuit feature of Claim 1 nor to the control circuit feature of Claim 11.

Therefore, it is respectfully submitted that Claims 3, 5, 6, 8, 13, 15, 16, and 18 are allowable over Smith et al., Ogasawara, A. Sedra et al., and, indeed, all of the art of record whether considered alone or in any combination. Wherefore, reconsideration and withdrawal of this rejection are respectfully requested.

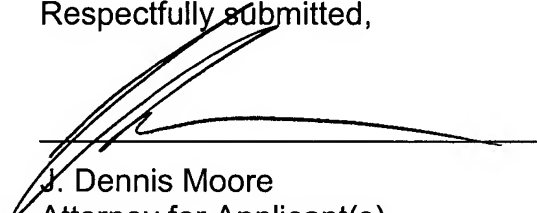
It is respectfully submitted that the claims recite the patentably distinguishing features of the invention and that, taken together with the above remarks, the present application is now in proper form for allowance.

Reconsideration of the application, as amended, and allowance of the claims are requested at an early date.

While it is believed that the instant amendment places the application in condition for allowance, should the Examiner have any further comments or suggestions, it is respectfully requested that the Examiner contact the undersigned in order to expeditiously resolve any outstanding issues.

To the extent necessary, the Applicants petition for an Extension of Time under 37 C.F.R. §1.136. Please charge any fees in connection with the filing of this paper, including extension of time fees to the Deposit Account No. 20-0668 of Texas Instruments Incorporated.

Respectfully submitted,



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